Variation in perceptions of a 'medium' food portion: Implications for dietary guidance

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The prevalence of overweight is increasing among US adults (1,2) and adolescents (3). As many as 44 million persons aged 25 years or older report that they are attempting to lose weight (4), mainly through energy restriction (5,6). This method is a risky one, however, and maintaining a healthy weight remains a lifelong challenge for many persons (5). Dietary restriction requires people to know the energy content and portion sizes of the foods they are consuming. Research indicates that most people cannot accurately estimate portion sizes of commonly consumed foods (7-12), and therefore, cannot accurately estimate energy intake (12,13). Thus, they might have difficulty controlling energy intake and maintaining a healthy weight.

A related problem is that standard portions, as defined by the federal government for the Food Guide Pyramid (15) and the Dietary Guidelines for Americans (16), are considerably smaller than portions typically consumed by the public (7,17,18). This discrepancy might make it difficult for people to relate the amounts they actually eat to recommended amounts. Many restaurant meals, snacks, and takeout food portions are larger than reference standards, and appear to be increasing in size, and thereby

Thus, it would be useful to know how people perceive standard portions defined qualitatively as "small," "medium," and "large." Of the studies that have systematically explored this question for dietary assessment purposes, I suggested that people generally ignore actual portion sizes and view the term "medium" on food frequency questionnaires, but view any portion they eat as medium, regardless of actual size (21). Another study found that respondents ignore amounts stated as medium portions on food frequency questionnaires because the sizes do not correspond to their idea of medium (22). We are unaware of any recent studies investigating how people perceive qualitative terms used in guidance materials as applied to standard portions. As part of a larger study on portion sizes in US diets, we designed a pilot study to obtain qualitative information on the sizes of portions that people might consider medium. We focused on medium because the term is often used as a reference standard on food frequency questionnaires (21-23), and this size can be compared to the terms "small" and "large."

METHODS

We asked students in 2 introductory nutrition classes in a large university to participate in a class project on dietary guidance on which they would not be graded. The classes comprised approximately 100 undergraduate and graduate students each. Data were analyzed in 1996-2000 and reflect women aged 18 to 30 years, and the majority (90%) were undergraduate students. Only 14% of the students were nutrition majors; the rest were a mix of nursing, psychology, music, education, and communication majors.

Table 1. Ratings of food items perceived as "medium" compared to USDHHS

<table>
<thead>
<tr>
<th>Weight (oz)</th>
<th>Bagle (n=21)</th>
<th>Muffin (n=21)</th>
<th>Cookies (n=12)</th>
<th>Salad (n=26)</th>
<th>Apple (n=26)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>21-334</td>
<td>18-400</td>
<td>.91-1.88</td>
<td>4.0-9.0</td>
<td>4.0-9.0</td>
</tr>
<tr>
<td>Mean weight (SD)</td>
<td>39.0 (9.5)</td>
<td>52.1 (16)</td>
<td>5.0 (4.6)</td>
<td>6.7 (1.6)</td>
<td>6.9 (1.6)</td>
</tr>
<tr>
<td>Mean weight (g)</td>
<td>40 (5.5)</td>
<td>65 (10)</td>
<td>60 (5.5)</td>
<td>60 (5.5)</td>
<td>60 (5.5)</td>
</tr>
</tbody>
</table>

USDHHS portions (21,22) | 20 | 10 | 0.75 | 3 |

The table shows that the average portions perceived as "medium" by the students were larger than the reference standards. However, the range of perceived "medium" portions was quite large, indicating that people may have different perceptions of what constitutes a "medium" portion.
After a series of lectures on nutrition standards that included a discussion of the Food Guide Pyramid (15) and US Dietary Guidelines (16), we divided the students into 3 groups according to the first letter of their last names and asked them to bring in at least 1 sample of a bagel, baked potato, muffin, apple, or cookie that they considered medium. Teachers and weight of the foods brought in by their group of students using a calibrated Pelleau Portion Control food scale (MSI/VOSS, Evanston, IL), and recorded weights to the nearest 0.1 of an ounce. We conducted a more detailed portion on paper prior to completion of this project.

RESULTS AND DISCUSSION

The students brought in 31 bagels, 25 muffins, 13 cookies, 24 baked potatoes, and 22 apples that they considered medium. The Table presents the raw weights of these items, along with mean, median, and mode weights compared to USDA definitions. The bagels ranged in weight from 2.0 oz to 5.3 oz (mean = 2.8 oz, median = 2.5 oz, mode = 2.0 oz). Only 3 (9.7%) of the 31 bagels weighed the same as the weight used for bagels in the Food Guide Pyramid (2.0 oz), the remaining 29.3% exceeded this amount. Weights of the mean, median, and mode were almost twice as large as the weight used in the Food Guide Pyramid. Muffins ranged from 1.9 oz to 8.0 oz (mean = 2.5 oz, median = 2.0 oz, mode = 2.0 oz). All of the muffins exceeded the Food Guide Pyramid’s definition of medium (1.5 oz), mean, median, and mode exceeded this definition by at least threefold. Cookies ranged from 0.3 oz to 1.0 oz (mean = 0.5 oz, median = 1.0 oz, mode = 0.5 oz). Weights of the mean and median cookie were almost twice as large as the Food Guide Pyramid medium cookie (0.5 oz).

Baked potatoes ranged from 4.0 oz to 9.0 oz (mean = 6.2 oz, median = 6.5 oz, mode = 6.0 oz, 9.0 oz). All of the potatoes exceeded the amount used in the Food Guide Pyramid (3.8 oz) and the mean and median sizes for potatoes were at least 2.5 oz or larger than the Food Guide Pyramid size. Apples ranged from 4.0 oz to 6.0 oz. The Food Guide Pyramid does not specify a weight for a medium apple, but the range was more than twofold.

Thus, a wide variation existed in students’ perceptions of medium food portions; the range was at least twofold for all items. Most items were also much larger than the USDA definitions of medium, as reflected by USDA definitions of medium (15,19,20).

APPLICATIONS

Our results suggest that people have different concepts of medium, and the use of qualitative terms such as small, medium, large, and in some cases, rather descriptive; the statement, “a medium serving of fruit” means different things to different people. The wide variation in perceptions of the term “medium” implies that perceptions of energy also will vary widely (24).

Our findings suggest that nutrition professionals counseling patients about the relationship of portion sizes to energy intake should define servings of food items by quantitative (weight) rather than qualitative terms. When conducting future histories, dietitians should probe to determine actual amounts of food consumed if patients or study subjects report food intake in qualitative terms.

Finally, our results suggest that federal definitions of standard servings may need to be reevaluated. Standards that more closely reflect typical sizes of foods might better help the public understand the relationship between food intake, energy intake, and health.

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References


